

Present Claims

1-33. (Canceled)

1 34. (New) A digital micro-mirror device projection system for outputting a  
2 stereoscopic encoded optical signal comprising  
3       3D data formatter for accepting input stereoscopic image signals having an input  
4 frame rate, processing said input signals, and providing an output signal characterized by  
5 an a self synchronized output frame rate independent of and decoupled from the input  
6 frame rate,  
7               wherein said self synchronized output frame rate is predetermined or set  
8               by a user;  
9        a digital micro-mirror device data formatter for receiving an input stereoscopic  
10 image and control signal at the output frame rate generated by the 3D data formatter, and  
11 for outputting an output stereoscopic image and control signal including  
12               color wheel control signals indicative of rotation rate;  
13               output digital micro-mirror device data indicative of micro-mirror  
14 switching rates;  
15               optionally 3D field signal for synchronization with an optional active  
16 rotator of a 3D encoder sub-system;  
17               wherein said color wheel control signal, output digital micro-mirror device  
18 data and optional 3D field signal are synchronized based on the output frame rate  
19 generated by the 3D data formatter;  
20        said digital micro-mirror device data formatter comprising  
21               a dual port memory controller that converts input stereoscopic

22           image and control signal at the output frame rate from a full color image  
23           into an image stream having serial individual color images synchronized  
24           to the rotation of the color wheel based on the output frame rate;  
25           a memory device;  
26           a digital micro-mirror device data converter for formatting data  
27           into a format readable by a digital micro-mirror chip;  
28           a micro-controller for setting the register values of the dual port  
29           memory controller based on the 3D format and sets the optional 3D field  
30           signal;  
31           an illumination source including  
32           a lamp for transmitting light to condensing optics, light from said  
33           condensing optics being transmitted to a rotating color wheel,  
34           the rotating color wheel coupled to digital micro-mirror device  
35           data formatter for receiving color signal data indicative of rotation rate  
36           synchronized based on the output frame rate generated by the 3D data formatter;  
37           a digital micro-mirror chip receiving the output digital micro-mirror device data  
38           synchronized with the output frame rate generated by the 3D data formatter from the  
39           digital micro-mirror device data formatter and reflecting, from micro-mirrors of the  
40           digital micro-mirror chip, light received from said color wheel;  
41           a 3D encoder system having a first 3D encoder sub-system integrated with said  
42           color wheel, said 3D encoder system synchronized with the output frame rate generated  
43           by the 3D data formatter; and  
44           projection optics for projecting light reflected from said digital micro-mirror chip.

- 1    35. (New) A stereoscopic projection system comprising the digital micro-mirror
- 2    device projection system as in claim 34 and an optical decoder for allowing a viewer to
- 3    perceive stereoscopic images.
- 1    36. (New) The stereoscopic projection system as in claim 35, wherein the optical
- 2    decoder comprises passive polarizing lenses having one polarization state corresponding
- 3    to one eye and another polarization state corresponding to another eye.
- 1    37. (New) The stereoscopic projection system as in claim 35, wherein the optical
- 2    decoder comprises active shutter glasses.
- 1    38. (New) The digital micro-mirror device projection system as in claim 1, wherein
- 2    said self synchronized output frame rate is set or selected to reduce appearance of flicker.
- 1    39. (New) The digital micro-mirror device projection system as in claim 1, wherein
- 2    the output signal of the 3D data formatter is Color Sequential stereoscopic data.
- 1    40. The digital micro-mirror device projection system as in claim 1, wherein the
- 2    output signal of the 3D data formatter is Frame Sequential stereoscopic data.
- 1    41. (New) The digital micro-mirror device projection system as in claim 1, wherein
- 2    the color wheel and the first 3D encoder sub-system comprises circular polarizing color
- 3    filters.
- 1    42. (New) The digital micro-mirror device projection system as in claim 41, further
- 2    comprising
- 3    a second 3D encoder sub-system including a 1/4 wave plate for switching polarization
- 4    states positioned between said digital micro-mirror chip and said projection optics or
- 5    positioned in a light path after said projection optics.

1    43     (New) The digital micro-mirror device projection system as in claim 1, further  
2     comprising a polarizer positioned between the lamp and the condensing optics.

1    44.    (New) The digital micro-mirror device projection system as in claim 43, wherein  
2     said polarizer is a linear polarizer, further comprising  
3     a second 3D encoder sub-system including an active rotator for switching polarization  
4     states positioned between said digital micro-mirror chip and said projection optics or  
5     positioned in a light path after said projection optics, said digital micro-mirror device data  
6     formatter further outputting a 3D field signal synchronized with the output frame rate of  
7     said 3D data formatter, said active rotator coupled to 3D field signal.

1    45.    (New) The digital micro-mirror device projection system as in claim 43, wherein  
2     said polarizer is a circular polarizer, further comprising a second 3D encoder sub-system  
3     including an active rotator for switching polarization states positioned between said  
4     digital micro-mirror chip and said projection optics and a 1/4 wave plate between said  
5     digital micro-mirror chip and said active rotator, or a second 3D encoder sub-system  
6     including an active rotator for switching polarization states positioned in a light path after  
7     said projection optics and a 1/4 wave plate positioned between said projection optics and  
8     said active rotator,  
9     said digital micro-mirror device data formatter further outputting a 3D field signal  
10    synchronized with the output frame rate of said 3D data formatter, said active rotator  
11    coupled to 3D field signal.

1       46.    (New) A digital micro-mirror device projection system for outputting a  
2     stereoscopic encoded optical signal comprising  
3       3D data formatter for accepting input stereoscopic image signals having an input

4 frame rate, processing said input signals, and providing an output signal characterized by  
5 an a self synchronized output frame rate independent of and decoupled from the input  
6 frame rate,  
7 wherein said self synchronized output frame rate is predetermined or set  
8 by a user;  
9 a digital micro-mirror device data formatter for receiving an input stereoscopic  
10 image and control signal at the output frame rate generated by the 3D data formatter, and  
11 for outputting an output stereoscopic image and control signal including  
12 color wheel control signals indicative of rotation rate;  
13 output digital micro-mirror device data indicative of micro-mirror  
14 switching rates;  
15 optionally 3D field signal for synchronization with an optional active  
16 rotator of a 3D encoder sub-system;  
17 wherein said color wheel control signal, output digital micro-mirror device  
18 data and optional 3D field signal are synchronized based on the output frame rate  
19 generated by the 3D data formatter;  
20 said digital micro-mirror device data formatter comprising  
21 a dual port memory controller that converts input stereoscopic  
22 image and control signal at the output frame rate from a full color image  
23 into an image stream having serial individual color images synchronized  
24 to the rotation of the color wheel based on the output frame rate;  
25 a memory device;  
26 a digital micro-mirror device data converter for formatting data

27                   into a format readable by a digital micro-mirror chip;  
28                    a micro-controller for setting the register values of the dual port  
29                    memory controller based on the 3D format and sets the optional 3D field  
30                    signal;  
31                   an illumination source including;  
32                    a lamp for transmitting light to condensing optics, light from said  
33                    condensing optics being transmitted to a rotating color wheel,  
34                    the rotating color wheel coupled to digital micro-mirror device  
35                    data formatter for receiving color signal data indicative of rotation rate  
36                    synchronized based on the output frame rate generated by the 3D data formatter;  
37                    a digital micro-mirror chip receiving the output digital micro-mirror device data  
38                    synchronized with the output frame rate generated by the 3D data formatter from the  
39                    digital micro-mirror device data formatter and reflecting, from micro-mirrors of the  
40                    digital micro-mirror chip, light received from said color wheel;  
41                   a 3D encoder system including a polarizing device and an active rotator, the active rotator  
42                   coupled to said 3D field signals from said digital micro-mirror data formatter, said 3D  
43                   field signals being synchronized with the output frame rate generated by the 3D data  
44                   formatter, said 3D encoder system positioned between digital micro-mirror chip and  
45                   projector optics or positioned in a light path after said projection optics.

1     47. (New) The digital micro-mirror device projection system as in claim 45, wherein  
2     said polarizing device of said 3D encoder system comprises a linear polarizer.

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- 1    48. (New) The digital micro-mirror device projection system as in claim 45, wherein
- 2    said polarizing device of said 3D encoder system comprises a circular polarizer and a 1/4
- 3    wave plate.